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## HIGHWAY BY-PASSES AND THEIR ECONOMIC EFFECT UPON NEARBY COMMUNITIES

by  
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### THE SETTING AND THE PROBLEM

The national system of Interstate Roads, when it is built,<sup>1</sup> will be built to expressway standards.<sup>2</sup> This, of necessity, means that much of our present interurban road system will have to be rebuilt, or relocated and then built new. The rebuilding of our present system or its relocation will bring untold changes to the many thousands of economic units now located on or near the existing major highways. This rebuilding or relocation, while it is vital to our economic and social well-being, will create many problems for the various highway boards and construction groups of the country.

Perhaps the most vexing problem created will be that of what to do about highway locations through our towns and cities. From the standpoint of design and construction, the easiest solution would be to relocate and build a new road outside the urban areas altogether. This idea runs counter to the needs and wishes of most of our motorists, however, as the results of numerous origin-destination surveys show.<sup>3</sup> It was found that a large percentage of traffic approaching a city intended to stop in that vicinity. Only in the case of cities with populations of less than 2,500 was there a desire on the part of the majority of motorists to drive through without a pause. Similar studies also

showed that much of the total movement of automobiles was within a single urban area, rather than from one area to another. For example, it was discovered that about 50 per cent of the total vehicle miles driven was on city streets and that short trips of less than 20 miles accounted for almost 85 per cent of all travel, both urban and rural.<sup>4</sup>

When these facts about driver habits became generally known and widely accepted, the nation's highway administrators tended to forget, or push to the back of their minds, some of their plans for by-passing urban communities. The by-pass idea was not allowed to die, however, because the problem of congestion on our streets and highways kept coming constantly to the fore as more and more automobiles and trucks were placed on the nation's highways following World War II. Some states went back to by-pass planning and construction, and others turned to building better rural units almost exclusively. There are many stretches of beautiful new highway which come to ignominious ends as they reach the outer limits of cities.

Some states began to use a combination of the by-pass idea and the urban expressway. A new route would be selected through a city, and a fine multiple-lane highway constructed. This plan was successful in stopping congestion—until there was time to build a chain of businesses along the new route. After this, the new by-pass often became just one more congested city street, as the town wrapped itself closely about this new artery, thus managing to reduce its effectiveness to a fraction of its rated capacity. In other areas, some expressway construction took place and the authorities were able to secure the right to control access to these roads. Such developments have shown more and more capacity and are still free, in large measure, from the distressing effects of urban

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1. The Interstate System will be built because the nation has found it imperative to provide adequate service to the growing population of the country. At this writing a joint committee of the Congress has agreed on a final draft of the highway bill.

2. The standards which are commonly accepted as necessary are multiple lanes, some separation of lanes by direction, some limitation of access, and elimination of hazardous grade crossings.

3. These studies, conducted by physically counting vehicles and by interview of motorists, provide detailed information about the travel desires and habits of American vehicle users. They have been used extensively, especially around urban areas. The Bureau of Public Roads very wisely encouraged and assisted the various states to begin this type of research as far back as the early thirties. As a result of these studies we now have a relatively clear picture of the nation's driving habits and what it will take to supply our basic highway needs. The Interstate System is partially an outgrowth of these and other studies of a similar nature.

4. Data in this paragraph are based on material in "By-Passes—Their Use, Effect and Control", by Harold L. Michael, Purdue University Engineering Bulletin, Road School Proceedings, 1953.

strangulation.

As a result of the mounting pressure for some remedial action, many by-passes and other urban facilities have been built during the relatively recent past. By-passes probably have been more numerous than other types. Some of them have been successful, and have made firm friends among the citizens of the community served. Others have been opposed just as bitterly, particularly in the early stages. Local merchants who desire to see their businesses flourish feel that cutomers are the key to success, and therefore they seek to maintain a heavy flow of traffic before their establishments. The minds of these businessmen are filled with the theory that they must be seen to be known, and they want all the world to drive, walk, or crawl past their doors. These views, whether right or wrong, are held by many people who are also voters and men of influence. As a result, they have prevented the acceptance of a number of proposals for the improvement of facilities in many communities and thus have added to the lack of progress in our needed highway modernization. As vehicle registrations have mounted in recent years, this indecision as to the most desirable method of designing and constructing highway facilities near cities has become a problem of growing importance. With the coming of construction activity for the entire 40,000 mile Interstate System, the problem must be answered or the program may become hopelessly bogged down in recrimination, bickering, and sectional strife.

**The Need for Research:** In the endeavor to find some of the answers to the problem of highway modernization, this study was undertaken. After consultation with the Division of Planning of the Georgia State Highway Department it was decided to attempt to bring together the available data on the economic effects of by-passes on urban communities and to determine what conclusions could be drawn from this information. It was thought that if this preliminary study proved of value, then other studies of differing and broader scope might be undertaken with worthwhile results.

#### THE STUDY

In order to solicit information from all interested parties, letters were written to the chairmen of all of the forty-eight highway boards, as well as to the Bureau of Public Roads, the Highway Research Board, and to the various highway user groups. The letter asked for information in the possession of the agency, information as to where other material could be located, and comments or suggestions about efforts to locate information on this subject.

To date, forty-six of the state boards have replied to the request for information, sending comments, materials, and suggestions as to where other material could be secured. In addition to

this invaluable help from the state offices, replies have been received from many other agencies, and a substantial amount of information on the subject has been collected. A bibliography of the material received lists 110 separate items, from one page memos to one book of 387 pages.

**Analysis of the Replies From the States:** Forty of the states replying stated or implied that they liked the idea of by-passes as one means of improving road performance. Six states showed no such interest in their letters, but at least three of the six are known to use by-passes in some instances.

It is very clear that most of the states have been quite active in making origin and destination studies of traffic conditions in or around their respective urban areas. These highly detailed field studies, backed up by careful estimates of economic benefits to the motorist, have been used in many cases as the basis for the expressways and free-ways which are being developed in some of our urban areas. We have not uncovered nearly as much activity, however, in determining whether the general economy will be helped or hindered by this type of development. Most engineers and highway administrators have apparently worked on the assumption that what is desirable for the motorist

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is also desirable for all individuals and for the economy as a whole. The following excerpts emphasize this point:

In the planning and development of by-pass lines in . . . our preliminary economic studies have been confined to those benefits which accrue to motor traffic. These studies incorporate such items as time and distance savings, decrease in rise and fall, and reduction of curvature.

Another letter carried the following:

Today these determinations are made by more scientific means, such as origin and destination surveys, the principle being to locate the highway to best serve the most drivers. If an estimate of traffic to use the by-pass shows a sufficiently large volume, the by-pass could be justified. . . .

There is a growing awareness, however, of the over-all economic implications of highway location, as the following quotation will show.

I presume from the tenor of your letter that you are more concerned with the effect on business in the by-passed community. Our department has only recently started some pilot studies with respect to by-passed communities, and the data have not been assembled and analyzed as yet.

Another letter had this comment:

The . . . Department has held various public meetings throughout the state concerning by-passes and their economic effects on the municipality. Although we have held these meetings and much thought has been given the subject by our engineers, we do not have information. . . .

From the replies received from the forty-six states, one can locate fourteen states which are taking, or have taken, some action toward studying the economic effects of by-passes upon the communities affected.

One outstanding fact about this group is that California is the only state which can show that it has done an adequate job in this matter. For the past ten years at least, California has been collecting data on the subject and has been compiling reports pertaining to specific communities and their local highway problems. These reports, in many cases, are published in the journal, *California Highways and Public Works*, which receives widespread distribution throughout the state. These articles have found their way into many of the national journals as well.

Definite and positive evidence of the work California is doing came to light in the replies from other states. Twenty of the forty-six states replying either mentioned the work being done in Cali-

fornia or said that they used the California information when specific data was needed. One letter carried the following paragraph:

The State of California has done more work on by-passes and the study of expressways than all the other states combined.

The only other states which reported data available on economic studies of this type were Indiana and Arizona.<sup>5</sup> The Joint Highway Research Project, located at Purdue University, in cooperation with the Metropolitan Area Traffic Survey Unit of the State Highway Commission of Indiana, has conducted studies of by-pass effects upon two Indiana communities. The localities studied were Kokomo, "a rather typical Indiana city of about 35,000 population," and Lebanon, "a static community of less than 10,000 population." Reports of these studies are available, and much of the most important information has been published by the Highway Research Board.

The Division of Economics and Statistics of the Arizona Highway Department, with the help of the Safford-Graham County Chamber of Commerce, published a brochure in 1953 which contained the results of the study made at Safford after the Highway Department had relocated the main business street of the community. This small city of 3,700 people went through a major rearrangement as a result of the street change, and the report of its experiences is most informative.

The ten states listed as currently active in economic evaluation are rather widely scattered over the United States. Vermont is one, and its studies concerning two villages will be published soon. Massachusetts is organizing now to begin such studies in the near future and hopes to use some of the facilities and personnel of the Massachusetts Institute of Technology on the project. Virginia is engaged in the final year of data collection, its work being carried on through the Council of Highway Investigation and Research at the University of Virginia.

Five midwestern states have reported activity on economic studies of this type. Indiana's studies were mentioned above. Ohio is just getting underway with its operational plans to study three small communities recently chosen to have by-passes constructed near them. Missouri is in its last year of data collection, using three small communities near Fort Leonard Wood as its subjects. Kansas has laid its plans to begin studies in three small cities of that state. Oklahoma has not as yet started collecting data, but it has submitted plans to the Bureau of Public Roads for its approval.

#### LARGER STUDY AVAILABLE

Those who care to read the detailed study from which this report is derived can secure a free copy of the booklet **ECONOMIC CONSEQUENCES OF HIGHWAYS BY-PASSING URBAN COMMUNITIES**, by Dr. James H. Lemly, by mailing a request for it. Send requests for this study (published in August 1956) to the Bureau of Business and Economic Research, Georgia State College, Atlanta 3, Georgia.

5. The State of Texas has done a vast amount of work in its study of the great Gulf Freeway in Houston. A large number of reports have been prepared on this project, and the book, *A Study of Land Values and Land Use Along the Gulf Freeway*, is a valuable document which is directly in keeping with other economic studies, but the Gulf Freeway cannot properly be called a by-pass road. This investigation is concerned less with the great city expressways and throughways and more with the by-pass which keeps at least some traffic away from the community.





## MAY ATLANTA AREA ECONOMIC INDICATORS

ITEM	May 1956	April 1956	% Change	May 1955	% Change
<b>EMPLOYMENT</b>					
Job Insurance (Unemployment)					
Payments -----	\$295,705	\$212,686	+39.0	\$242,241	+22.1
Job Insurance Claimants† -----	4,318	3,971	+8.7	3,896	+10.8
Total Non-Agricultural Employment ---	327,400	327,200*	+0.1	314,100*	+4.2
Manufacturing Employment -----	87,000	88,350*	-1.5	86,500*	+0.6
Average Weekly Earnings,					
Factory Workers -----	\$69.52	\$69.48*	+0.1	\$68.14	+2.0
Average Weekly Hours,					
Factory Workers -----	39.5	39.7*	-0.5	40.8	-3.2
Number Help Wanted Ads -----	11,288	10,836	+4.2	11,328	-0.4
<b>CONSTRUCTION</b>					
Number of Building Permits					
City of Atlanta -----	950	1,066	-10.9	1,077	-11.8
Value Building Permits					
City of Atlanta -----	\$7,906,676	\$3,847,345	+105.5	\$6,253,622	+26.4
Employees in Contract Construction ---	20,900	20,350*	+2.7	18,850*	+10.9
<b>FINANCIAL</b>					
Bank Debits (Millions) -----	\$1,518.6	\$1,483.9	+2.3	\$1,426.6	+6.4
Bank Deposits (Millions)					
(Last Wednesday) -----	\$1,044.6	\$1,054.9	-1.0	\$1,001.8	+4.3
<b>POSTALS§</b>					
Postal Receipts -----	\$1,563,735	\$1,412,421	+10.7	\$1,479,283	+5.7
Poundage 2nd Class Mail -----	1,467,415	1,432,951	+2.4	1,455,590	+0.8
<b>OTHER</b>					
Department Store Sales Index					
(Adjusted) (1947-49=100) -----	148	154	-3.9	145	+2.1
Retail Food Price Index -----	108.9	107.8	+1.0	111.1	-2.0
Number of Telephones in Service -----	280,327	279,586	+0.3	259,519	+8.0
Number of Local Calls per Day -----	1,959,562	1,997,817	-2.0	N. A.	--

\*Revised      N.A.—Not Available.  
§City of Atlanta only.

Sources: All data on employment, unemployment, hours, and earnings: Employment Security Agency, Georgia Department of Labor; Number Help Wanted Ads: Atlanta Newspapers, Inc.; Building permits data: Office of the Building Inspector, Atlanta, Georgia; Financial data: Board of Governors, Federal Reserve System; Postal data: Atlanta Post Office; Retail Food Price Index: U. S. Department of Labor; Department Store Sales and Stocks Indexes: Federal Reserve Bank of Atlanta and Board of Governors, Federal Reserve System; Telephones in Service: Southern Bell Telephone and Telegraph Company.



## JANUARY THROUGH MAY, 1955 and 1956

1956	1955	ITEM	% Change
50,282	45,405	Number Help Wanted Ads -----	+10.7
19,920	18,130	No. Construction Employees* -----	+9.9
\$7,484.8	\$6,861.7	Bank Debits (Millions) -----	+9.1
280,327	259,519	Telephones in Service** -----	+8.0
326,810	305,310	Total Non-Agricultural Employment* -----	+7.0
N. A.	N. A.	Department Store Sales, Based on Dollar Amounts** -----	+6.0
88,790	84,320	No. Manufacturing Employees* -----	+5.3
\$1,044.6	\$1,001.8	Total Deposits (Millions)** -----	+4.3
\$68.83	\$66.31	Average Weekly Earnings, Factory Workers* -----	+3.8
\$7,349,253	\$7,215,149	Postal Receipts, Atlanta Post Office -----	+1.9
6,972,418	7,053,020	Poundage 2nd Class Mail, Atlanta Post Office -----	-1.1
40.0	40.5	Average Weekly Hours, Factory Workers* -----	-1.2
N. A.	N. A.	Department Store Stocks** -----	-2.0
108.9	111.1	Retail Food Price Index (May) -----	-2.0
4,579	4,735	Number Building Permits, City of Atlanta -----	-3.3
19,396	23,845	Job Insurance Claimants -----	-18.7
\$25,732,475	\$34,089,578	Value Building Permits, City of Atlanta -----	-24.5

\*Average Month

\*\*End of Period

N.A.—Not Available

Sources: Same as Page 4

The two remaining states in this active group are on the west coast. One of these obviously is California, and the other is Oregon, which has just begun to collect data on "some pilot studies."

Among the other states not included in the fourteen listed as having made some economic studies, there are seven that report some action to secure public acceptance of by-passes by means other than by making the engineering type origin-destination studies referred to earlier. Two of these seven states are required by law to hold public hearings before any action on by-pass construction can take place, and apparently two other states hold hearings of this type on special occasions.<sup>6</sup>

In addition to these twenty-one states discussed so far, six other states indicated that their officials gave some consideration to the economic implications in by-pass location when final decisions were reached on where such facilities should be built.<sup>7</sup>

The remaining nineteen states (a) replied that the state was not immediately in need of by-pass routes, or (b) replied that the state was aware of the problem, but could offer no data, or (c) referred to the California studies, or (d) suggested that interested parties contact the Bureau of Public Roads or some other organization. One state seems

almost entirely precluded from by-pass activity, at least for the present. Its letter said,

The problem of by-passing towns is a difficult one in this state as we have a recent law which requires us to maintain the old highway even though a new one is constructed.

#### **The Studies Currently Available Concerning the Economic Effects of By-Passes**

Of the 110 pieces of material which were submitted by interested parties, only sixteen completed studies dealt specifically with the economic consequences of by-passes. Of these sixteen, twelve came from California,<sup>8</sup> two from Indiana, one from Arizona, and the last was the study of land values and land use along the Gulf Freeway, in Houston, Texas. Table I gives a resume of the basic data about these projects.

Two of these studies dealt with the very great problem of big city congestion and redevelopment. The Gulf Freeway is a part of a long term program to provide modern highway facilities for Texas' great city. The Santa Ana Freeway, serving Los Angeles in its congested southeastern sector, has a history and a purpose quite similar to that of the Gulf Freeway, except that it is one of several facilities serving the metropolitan area of Los Angeles, while Houston has only the Gulf Freeway completed and in service.

Two more of the studies reported were developed for large urban areas. The Fresno Freeway is a nine and a half mile facility which begins near the southern limit of Fresno, California, and has been used since its completion as a major industrial artery for the territory. Its frontage roads have been the scene of rapid development and the roadway at this point is serving over 30,000 vehicles per day. The other industrial artery is the East-shore Freeway, which runs from Oakland, California, south toward San Jose on the eastern side of San Francisco Bay. The seven and a half mile stretch of this road nearest Oakland has been the scene of more rapid industrial development than any other in the entire region.

**Highway Relocations Through Built-Up Areas of Small Cities and Towns:** Seven of the studies were concerned with urban relocation activities to relieve congestion in the center of the town under consideration. The cities ranged in size from 1,700 to a high of 35,000 population. Five of the towns studied were in California and one each in Arizona and Indiana. Although there were major differences in the structure and business interests of each town, none of the studies indicated that there was injury to the locality by the new development. On the contrary, each community was shown to have been bettered by the change in street alignment. The evidence does show that some damage was done to some economic units. There was concrete evidence that some businesses had to rearrange their patterns

8. After this paper was completed, California supplied three more studies in order to enlarge the data available.

6. The Federal government also has such a provision in its 1950 Highway Legislation. It will be interesting to see if it is removed in the current act which provides for control of access.

7. It should be emphasized that the original letter sent out by the writer did not ask specifically for such information and it is not assumed that this represents a true sample on the matter. It is offered only as one of the interesting items in the information received.



**CAMARILLO, CALIFORNIA—SHOWING NEW U. S. 101**  
Aerial view showing freeway and old highway through center of Camarillo. The road to the left of the freeway still serves the central portion of the business district. (Taken from CALIFORNIA HIGHWAYS AND PUBLIC WORKS)



TABLE I

**URBAN BY-PASSES WHICH HAVE BEEN SUBJECT OF STUDY AS TO  
ECONOMIC EFFECT ON COMMUNITY BY-PASSED<sup>1</sup>**

BY-PASS	APPROXIMATE SIZE OF COMMUNITY	TYPE CONSTRUCTION	LOCATION IN RELATION TO COMMUNITY AND REASON FOR CONSTRUCTION	LENGTH	DATE OPENED
I. TEMPLETON CALIFORNIA	600	EXPRESSWAY <sup>2</sup>	RURAL—NEW CONSTRUCTION, <sup>3</sup> COMPLETE BY-PASS—relieve congestion	.6 mile	1953
II. FOLSOM CALIFORNIA	1700	EXPRESSWAY	RURAL—NEW CONSTRUCTION, COMPLETE BY-PASS—shorten highway	7.3 miles	1949
III. IMPERIAL CALIFORNIA	1700	EXPRESSWAY w. frontage rds.	URBAN—NEW LOCATION <sup>4</sup> ½ block from old route—relieve congestion	.6 mile	1949
IV. ANDERSON CALIFORNIA	2200	EXPRESSWAY w. frontage rds.	URBAN—NEW LOCATION ½ block from old route—relieve congestion	.6 mile	1950
V. FAIRFIELD CALIFORNIA	3600	EXPRESSWAY	RURAL—NEW CONSTRUCTION, COMPLETE BY-PASS—relieve congestion	4.7 miles	1949
VI. SAFFORD ARIZONA	3700	CONVENTIONAL 4 Driving lanes separated	URBAN—NEW LOCATION 1-3 blocks from old route—relieve congestion	.7 mile	1947
VII. AUBURN CALIFORNIA	5000	FREEWAY <sup>5</sup>	URBAN—NEW LOCATION 3-6 b'ocks from old route—relieve congestion	2.0 miles	1948
VIII. CAMARILLO CALIFORNIA	6000	FREEWAY- EXPRESSWAY	URBAN—NEW LOCATION 1-3 blocks from old route—relieve congestion	1.0 mile	1954
IX. N. SACRAMENTO CALIFORNIA	6000	FREEWAY	RURAL—NEW CONSTRUCTION — COMPLETE BY-PASS—relieve congestion	4.1 miles	1947
X. ESCONDIDO CALIFORNIA	6600	EXPRESSWAY	URBAN—NEW LOCATION 2-4 blocks from old route—relieve congestion	2.0 miles	1949
XI. LEBANON INDIANA	7600	CONVENTIONAL R/W Avail. for 4 lanes	RURAL—NEW CONSTRUCTION — COMPLETE BY-PASS—relieve congestion	5.0 miles	1950
XII. KOKOMO INDIANA	35,000	CONVENTIONAL R/W Avail. for 4 lanes	URBAN—NEW LOCATION ½-1 mile from old route—relieve congestion	5.0 miles	1950
XIII. FRESNO CALIFORNIA	95,000	FREEWAY- EXPRESSWAY	URBAN—RURAL Fresno to Fowler—realignment and conversion	9.5 miles	1948
XIV. EASTSHORE CALIFORNIA	825,000	FREEWAY	URBAN—RURAL Alameda County (Metropolitan Oakland)—essentially new development for industry	7.5 miles	1951-53
XV. GULF TEXAS	1,000,000	FREEWAY	URBAN—Houston south toward Galveston — essentially new construction through urban area for relief of congestion	6.5 miles	1948-51
XVI. SANTA ANA CALIFORNIA	2,000,000	FREEWAY	URBAN—Los Angeles—essentially new construction thru urban area for relief of congestion	5.0 miles	1950-52

1. This list includes all data received in response to requests sent to all states. It is not guaranteed to be a complete list of all by-passes in the United States which may have had some economic study as to their development.

2. The term expressway is used to designate a multi-lane, divided roadway which has some limitation of access. Crossings are generally at grade but are not numerous.

3. New construction implies a completely new facility.

4. New location implies a change from a former to a new alignment. It does not necessarily imply that the former facility is removed.

5. The term freeway is used to designate a multi-lane, divided roadway which has complete limitation of access and no crossings at grade.

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of operation to stay alive. In a few instances some businesses were forced to move to more favorable locations, and there were three reported business failures in the most drastic relocation project, that in Safford, Arizona. In spite of the difficulties, not one of the towns studied reported that the project was harmful; on the contrary, all indications pointed to general satisfaction with the new arrangement, and some citizens wondered why such action had not been carried out sooner.

**Newly Constructed Highways Which Pass Through Rural Areas Thus Completely By-Passing Nearby Communities:** Five of the economic studies dealt with areas where the decision was reached to relocate the highway some distance from the existing route through the town. As this decision in each case necessitated new construction, the result was to provide new highway facilities and leave the existing urban road to become a city street rather than to serve in the dual capacity of street and highway.

This is the type of construction which seemingly should create the most serious problems for the adjacent urban area; however, in no instance was there evidence of major injury, except in the Lebanon, Indiana, study. In this case the project did not provide for frontage roads or limitation of access, and, as a result, some of the motoring service businesses such as cafes and filling stations were reported to have been hurt. As a consequence, those establishments which were most hurt were making plans to move to the new highway and thus to begin ribbon development along the by-pass. None of the four California towns reported this type of difficulty as in each case control of access was provided, and thus the motorist was required to leave the new roadway to seek service if he cared to stop along those areas.

One note of caution should be offered here about the California studies. They were carefully con-

trolled and well done, but it is not possible to make definite and binding comparisons for all of the rest of the United States from the experiences of this prosperous and rapidly expanding region. Because of the forward looking attitude of the west coast people, their approach to automobile use and even community development cannot be considered to be typical.

#### **GENERAL OBSERVATIONS ABOUT BY-PASSES**

The evidence which was presented in the sixteen studies strengthens a premise which most students of transportation and its effect upon economic life accept wholeheartedly. Transportation economists generally say that the economy of any region is benefited to some degree whenever new and improved methods of transportation are made available. In most instances the economy is helped almost in the same proportion as the new facility is used to provide either faster or better or lower cost transportation service to business units. It is also true, however, that one specific development may serve a region more efficiently and effectively than another project which is not as well planned and executed. It is in this area of choosing which project is the most desirable that the economist should enter the highway development picture. Thus, the highway designer, the engineer and the economist should work together in locating and constructing our modern highway system. If this can be done, especially in the area of by-pass development, the community as a whole should be protected from costly mistakes and provided with the best possible road system for long run economic satisfaction. As the country found during the last century while we were developing our vast railroad network, no society owes its future to any given group of businesses or to any given set of locations. By the same token, no society which believes in the rights of free men should harm any one or any group needlessly.